

Serial No. 09/900,400
Attorney Docket No. F0541
Firm Reference No. AMDSP0433US

Reply to Office Action Dated December 3, 2003
Reply Dated February 6, 2004

AMENDMENTS IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A semiconductor-on-insulator (SOI) device comprising:
 - a semiconductor substrate layer;
 - an insulator layer disposed on the substrate layer;
 - a semiconductor active region disposed directly on the insulator layer, the active region including a source, a drain, and a body disposed therebetween, the source and body forming an abrupt or hyperabrupt source/body junction;
 - a gate disposed on the body such that the gate, source, drain and body are operatively arranged to form a transistor; and
 - an implanted region at an interface between the body and the drain, the implanted region providing a graded drain/body junction that is disposed at least partially under the gate,
 - wherein the abrupt or hyperabrupt source/body junction does not include an implanted region similar to the implanted region at the interface between the body and the drain.
2. (Previously presented) The SOI device according to claim 19, wherein the atoms are absorbed by the gate when the atoms are implanted at an angle tilted towards the drain with respect to the vertical, the angle is about 0 to about 20 degrees from vertical.
3. (Previously presented) The SOI device according to claim 19, wherein the atoms are selected from germanium, xenon, silicon, argon and krypton.

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4. (Original) The SOI device according to claim 3, wherein the implanted atoms are germanium at a dose of about 1×10^{14} atoms/cm² to about 1×10^{15} atoms/cm².
5. (Original) The SOI device according to claim 4, wherein the implanted germanium atoms are implanted at an energy of about 10 keV to about 40 keV.
6. (Original) The SOI device according to claim 3, wherein the implanted atoms are germanium at an energy of about 10 keV to about 40 keV.
7. (Original) The SOI device according to claim 3, wherein the implanted atoms are germanium and result in a dopant concentration of about 1×10^{20} atoms/cm³ in the implanted region.
8. (Original) The SOI device according to claim 1, wherein the implanted region is disposed partially in the body below a portion of the gate adjacent the drain and is disposed partially in the drain thereby extending laterally across at least a portion of the drain/body junction.
- 9-17. (Cancelled)
18. (Previously presented) The SOI device according to claim 1, wherein the implanted atoms introduce lattice defects near the drain/body junction.
19. (Previously presented) The SOI device according to claim 1, wherein atoms implanted to form the implanted region are absent from a region surrounding the source/body junction.

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20. (Previously presented) The SOI device according to claim 18, wherein the atoms are selected from germanium, xenon, silicon, argon and krypton.

21. (New) The SOI device according to claim 1, wherein the source includes a source extension region and a main source region.

22. (New) The SOI device according to claim 21, wherein the abrupt or hyperabrupt source/body junction extends along a source extension junction and a main source junction and the body.

23. (New) The SOI device according to claim 21, wherein the drain includes a drain extension region and a main drain region.

24. (New) The SOI device according to claim 23, wherein the graded drain/body junction extends along a drain extension junction and a main drain junction and the body.